Original article

Determinants of duration of breastfeeding amongst women in Manipur

N Sanajaoba Singh[1], N Sharat Singh[2]

Abstract

Objective: The purpose of present study is to investigate the dif ferentials and determinants of duration breastfeeding (BF) according to various socio-economic and demographic factors. ***Methods:*** A cross sectional study of 1225 ever-married women of reproductive age with at least one live birth was conducted in four valley districts of Manipur under cluster sampling scheme. Survival analysis technique has been adopted through SPSS vs 16. ***Results:*** The median duration of BF is found to be 20.37 months. Among the six explanatory variables of interest, only two factors - place of residence (relative risk (RR) =1.35) and employment status RR = 1.88) have highly significant ef fect (P<0.01) on BF and only two factors educational level (RR=1.02) and parity (RR = 0.83) are found to be statistically significant (P<0.05) on BF . Conclusion: The residence, education, employment status and parity have significant ef fects on the present duration of BF that is about 20 months which is below the India's national figure of 25 months and WHO recommended figure of 24 months.

Key words: Fertility, censored case, parity, life table, proportional hazard model

Introduction

The benefits of breastfeeding (BF) to both the infants and the mothers are now evident [1, 2]. Extensive research, especially in recent years, has proven that BF reduces the morbidity and mortality of infants and children, and promotes maternal health, both in developing and developed countries [3-5]. BF prevents some bacterial infections, such as diarrhoeal disease, urinary tract infections, upper and lower respiratory tract, as well as bacteraemia and meningitis [4, 6, 7]. It also reduces certain immunological disorders, such as etopic eczema, food and respiratory allergy, and also the risk of chronic disorders later in life, such as Crohn's and coeliac diseases, childhood cancers and diabetes mellitus [8, 9]. Breastfeeding also benefits mothers by reducing risks of breast and ovarian cancer, lowering risks of obesity and cutting back on household expenses [10]. Furthermore, the suckling infant stimulates the flow of hormones within the mother that delay the return of ovulation. Extended breast-feeding lengthens the period of non-exposure to the risk of conception and thus lengthens the interval between consecutive births, which in turn indirectly reduces fertility [11-13]. Usually, BF is universal in most of the society . But its degree varies from society to society depending on the characteristics of mothers in the society such as education, occupation, availability of supplementary foods, socio-economic status, etc. [14-18]. So the study of behaviour and dif ferential of BF is very important in a society where the fertility , woman as well as child health is becoming a serious problem. Therefore this study tries to touch these issues. The main objective of this paper is to investigate the differentials and determinants of the duration of BF with some explanatory variables by using survival analysis techniques.

Materials and methods

A cross sectional study was conducted in four valley districts of Manipur namely Bishnupur , Thoubal, Imphal West and Imphal East during the period from 1 January 2009 to 30 June 2009. Manipur is a tiny state of North East India inhabited mainly by the Mongoloid race. Under cluster sampling scheme, a house-to-house survey was carried out with pre-tested semi-structural interview schedule and ever-married women of reproductive age with at least one live birth were interviewed. A total of 1225 women provided information on the duration of BF for their last born child, of whom 50 (4.1 %) reported to have never breastfed, 377 (30.8 %) had already weaned, 17 (1.4%) had experienced death of the child, and the remaining 781 (63.7 %) were still BF at the time of interview. The clusters of randomly selected villages in rural area and wards in urban area are completely enumerated. Altogether 45 villages in rural

1. *Dr. N Sanajaoba Singh, Directorate of Census Operation, Porompat, Manipur , India.
2. Dr. N Sharat Singh, Asst. Prof. in Statistics, Thoubal Govt. College under Manipur University, Imphal, India.

***Corresponds to:** Dr. N Sanajaoba Singh, Directorate of Census Operations, Porompat, Manipur , India.
Email: ningombamsanajaoba@zapak.com.

areas and 35 wards in urban areas are randomly selected. 5 villages and 7 wards, 9 villages and 10 wards, 11 villages and 12 wards, and 20 villages and 6 wards are selected from Bishnupur , Thoubal, Imphal West, Imphal East districts respectively. Out of 1225 eligible women, 180, 316, 387 and 342 eligible women are picked up from Bishnupur , Thoubal, Imphal West, Imphal East districts respectively. A total of 1013 households are surveyed.

The duration of BF is taken as the response variable. The duration of breastfeeding is defined as the child's age (in months) at the time of complete weaning, regardless of when consumption of other food began. For the children who have died or still being breastfed at the time of the survey , duration of total breast-feeding was considered equal to child's age at death or at the time of the survey and such cases are considered as censored cases. The explanatory variables or so termed as covariates are socio-economic and demographic variables. The categorical variables are quantified by binary dummy variable (0, 1). The socio-economic variables include place of residence (urban=1, rural=0), educational level and employment status (employed=1, unemployed=0). The demographic variables are age at marriage, sex of previous child (male=1, female=0) and parity.

As the study is confined in the censored data, the statistical analysis is therefore carried out using survival analysis techniques. At the first stage of the analysis, the survival distribution of BF (the proportion of women reported termination of BF within 6, 12, 18 and 24 months) with respect to socio-economic is estimated by life table technique[19, 20] and log rank test [21] is employed to compare the survival experience between different groups under study. At the second stage of the analysis, the ef fects of various demographic and socio-economic factors on the duration of BF are investigated by utilizing Cox's proportional hazard model [22]. The results of the regression analysis are interpreted in terms of its coefficient (ß), P-value and relative risk (RR: e ß) with 95% confidence interval (CI).

Results

Table 1 provides information on life table estimates of median duration of BF and the proportion of women reported termination of BF within 6, 12, 18 and 24 months with respect to socio-economic and demographic characteristics. The overall median duration of BF of the study population is 20.37 months. About 59 per cent, 35 per cent, 24 per cent, 16 per cent and 13 per cent of the mothers who have married during the age group of below 15 years, 15-20 years, 20-25 years, 25-30 years, and 30 years and above respectively terminate BF within 12 months. It also highlights that the median duration of BF increases with the increase in the age at marriage of mothers. By the Log rank test, the association between age at marriage of mothers and duration of BF is highly significant (?2= 26.181, P < 0.001). It could be examined that 59 per cent of mothers having parity zero terminate BF within 12 months. On contrary, 23 per cent of mothers having parity one, that of 22 per cent of parity two, 20 per cent of parity three and 19 per cent of parity four and above terminate BF within 12 months. The median duration of BF increases with the increase in parity and this variation is highly significant in the study population irrespective of other covariates (P < 0.001). Mothers residing in rural areas have longer duration of BF (20.85 months) than residing in urban areas (18.48 months) and relationship is found to be statistically significant (P<0.001). About 22 per cent of mothers residing in rural areas terminate BF within 12 months whereas about 25 per cent of mothers residing in urban areas terminate BF at the same time. Educational level of mothers show an inverse relationship with the duration of BF (P<0.001). About 50 per cent college and university level mothers terminate BF within 12 months whereas 22 per cent of mother with no schooling and 26 per cent of mothers with primary school level, 28 per cent of mothers with secondary school level and 35 per cent of mothers with higher secondary level terminate BF within the 12 months. A longer duration of BF is found for unemployed mothers (20.55 months) than employed mothers (15.40 months). About 22 per cent of unemployed mothers terminate BF within 12 months while 41 per cent of employed mothers terminate BF within 12 months.

To further analyze the partial ef fects on of each of the explanatory variables on the duration of BF while controlling other covariates, Cox's proportional hazard model analysis is performed. The results are presented in Table 2. After controlling other covariates the parity is negatively associated with the risk of termination of BF (ß=-0.186, P<0.05). By increasing a parity, the adjusted relative risk of termination of BF becomes 0.830 (95% CI: 0.715-0.964), indicating the risk is decreased by around 17 per cent. The place of residence has also significant impact on the risk of termination of BF (ß=0.300 and P<0.001). The risk of termination of BF of mothers

residing in urban is 1.350 times higher than those residing in rural areas (RR=1.350). By Wald's test, the educational level of mothers is positively associated with the risk of termination of BF (ß= 0.016, P<0.05) in the sense that when the educational level is increased by a one - year standard, the risk of termination of BF is increased by 2 per cent (RR= 1.016). The employment status of mothers also plays a significant role in the variation of duration of BF (ß= 0.609) which is highly significant (P<0.001). Employed mothers are found to be subject to a hazard of termination of BF 1.838 higher than those of unemployed mothers.

Table1: Life table of duration of BF according to different characteristics of mother

Variables	Proportion of weaning of BF at months				Median (Month)	Log rank test
	6	12	18	24		
Demographic:						
Age at marriage of wife(Years)						
<15	.16	.59	.69	.77	10.04	
15-20	.13	.35	.45	.68	19.38	
20-25	.09	.24	.33	.61	20.63	$\chi^2 = 26.181$,
25-30	.08	.16	.28	.58	21.39	d.f =4 ,P<0.001
≥30	.07	.13	.25	.55	22.82	
Parity						
0	.16	.59	.85	.90	10.72	$\chi^2 = 95.624$,
1	.10	.23	.38	.66	20.72	d.f = 4, P<0.001
2	.09	.22	.33	.63	20.76	
3	.08	.20	.32	.61	20.84	
4+	.05	.19	.30	.52	23.28	$\chi^2 = 0.240$,
Sex of the previous child						d.f = 1,P>0.05
Female	.10	.32	.36	.62	20.52	
Male	.09	.24	.34	.61	20.54	
Socio-economic:						$\chi^2 = 24.970$,
Place of residence						d.f = 1,P<0.001
Urban	.10	.25	.38	.69	18.48	
Rural	.08	.22	.32	.54	20.85	$\chi^2 = 35.405$,
Educational level of mother						d.f = 4, P<0.001
No schooling	.05	.22	.25	.46	28.18	
Primary school	.08	.26	.30	.59	20.99	
Sec. School	.09	.28	.32	.62	20.64	
Higher Sec. School	.10	.35	.41	.63	20.12	$\chi^2 = 59.408$,
College & University	.16	.50	.63	.77	12.64	d.f =1,P<0.001
Employment status of mother						
Unemployed	.09	.22	.14	.40	20.55	
Employed	.12	.41	.22	.53	15.40	
Overall					20.37	

Table 2: Cox's regression analysis of the selected covariates on the duration of BF

Explanatory variables	Coefficient (β)	SE	Wald	P-value	Relative risk (e^{β})	95% CI for e^{β}	
						Lower	Upper
Place of residence	0.300	0.062	23.114	0.000	1.350	1.195	1.526
Educational level of mother	0.016	0.008	4.512	0.034	1.016	1.001	1.032
Employment status of mother	0.609	0.093	42.550	0.000	1.838	1.531	2.207
Age at marriage of mother	-0.013	0.007	3.785	0.052	0.987	0.975	1.000
Parity	-0.186	0.076	5.958	0.015	0.830	0.715	0.964
Sex of the previous child	0.010	0.060	0.026	0.872	1.010	0.897	1.136

Discussion

The above result shows that the median duration of BF is 20.37 months, which is lower than the minimum of 24 months recommended by WHO for most children. The duration of about 20 months is also lacking behind the India's national figure of 25 months observed by National Family Health Survey-3 (NHFS-3). The finding of this study shows that duration of BF increases with the increase in parity . This is due to the fact that mothers of high parity may be older and they produce less milk but they may be more traditional in orientation, and usually lower order births occur in quick succession than higher order births and hence the chance of voluntary termination of BF at an early age of child might be higher for the lower birth order babies than for the higher birth order. These findings are consistent with the other findings made by several authors 15, 16. The education level of mothers show an inverse relationship with the duration of BF , which may be due to the fact that literate mothers probably start giving food supplements to their children earlier and so a shorter period of lactation. Similar , findings have also been obtained by other researchers based on data of developing countries [18]. However, some authors show no association between the duration of breastfeeding and educational level [17, 23]. Place of residence shows significant relationship with the duration of BF. The risk of termination of BF of mothers residing in urban is higher than those residing in rural areas. The shorter duration of BF in urban areas is perhaps due to the fact that mothers in urban areas are more educated and more employed than those in the rural areas. This view is incorporated with the some previous findings [16, 24]. Employed mothers have shorter duration of BF than unemployed mothers. The reason may be that employed mothers do not get enough time to breastfeed their children as they work outside and thus tend to lactate for shorter period and probably also provide food supplements to the children much earlier. This finding is consistent with other findings [14, 17].

Conclusion

The present duration of breastfeeding that is about 20 months is lower than the WHO recommended figure of 24 months and even lacking behind the all India's figure of 25 months. In order to achieve this minimum duration goal of 24 months, breastfeeding promotion programme in Manipur should address to the educated and employed mothers and those living in urban areas since these mothers tend to breastfeed their children for a relatively shorter period of time.

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